T E C H N I C A L M E M O R A N D U M

Utah Coal Regulatory Program

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TO: Internal File

THRU: Dana Dean, P.E., Reclamation Scientist III/Hydrology, Team Lead

FROM: Peter H. Hess, Reclamation Scientist III/Engineer, Inspector

SUMMARY:

The Division initiated a mid-term permit review of the Willow Creek Mine permit area on October 16, 2003. A site visit was conducted on November 20, 2003, at which time representatives from the DOGM and the Permittee examined the site. Part of the mid-term review process examines applicable portions of the permit to ensure that the plan contains commitments for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area. This technical memorandum will address the BTCA areas associated with the Willow Creek Mine facilities area, the Castle Gate preparation plant area, Gravel Canyon, and the Crandall Canyon area.

On July 31, 2000, the Permittee experienced a second explosion and mine fire in the D-3 longwall panel of the Willow Creek Mine. Due to the hazards associated with the extraction of the "D" seam and a lack of interest relative to the sale of the property, Plateau Mining Corporation informed the Division on September 3, 2002, of its intent to reclaim the property. Several permitting actions are currently ongoing, one of which would implement an "industrial" use for the main mine facilities area. As such, certain portions of the disturbed facilities are being reclaimed, while others have the potential to retain their current methods of sediment control.

The reclamation of the Crandall Canyon surface facilities was completed during November of 2003. Reclamation activities continue at the Castle Gate (Willow Creek) preparation plant area.

ANALYSIS OF IN-PLACE PERMIT CONDITIONS

Analysis:

Part of the mid-term permit review process requires the Division to review all permit conditions that are in place at the time. The current State of Utah permit issued by the Division of Oil, Gas and Mining effective April 24, 2001 contains only one permit condition, that being the requirement to submit water quality data for the Willow Creek Mine beginning with the second quarter of 2001 in an electronic format through the Electronic Data Input web site, http://linux1.ogm.utah.gov/cgi-bin/appx-ogm.cgi. The Permittee has been fulfilling this requirement for at least the last two years. The third quarter of 2003 surface and ground water monitoring information was submitted on October 17, 2003.

Findings:

The Permittee is complying with the special condition established within the State of Utah mining permit, included with Attachment A.

GENERAL CONTENTS

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

The midterm review process requires the Division to review all Division Orders, Notice of Violation abatement plans. The Division is also required to confirm that Permittee-initiated plan changes have been effectively incorporated into the plan document (Salt Lake City Division headquarters copy).

At the present time, there are no Division Orders pending for the Willow Creek Mine permit area. It should be noted due to a concern aired by the United States Dept. of the Interior, Bureau of Land Management, Utah State Office, relative to the disposition of, and the Division approved reclamation plan, it was necessary for the Division of Oil, Gas and Mining to issue a Division Order requiring the Permittee to submit a plan to backfill and implement said plan upon MSHA approval. At the Permittee's request, and based upon a commitment to incorporate and implement the approved MSHA plan, the Division rescinded the Order. The backfilling activities of the #1 and #2 airshafts in Crandall Canyon were completed in September 2003. As the backfill material continues to settle in the #1 shaft, the collars have been fenced and dangered off to prevent unauthorized curiosity. As noted elsewhere within this document, all reclamation activities were completed in the Crandall Canyon area in November 2003.

There are no Notices of Violation pending for the Willow Creek Mine, C/007/038.

The last permit amendment that required incorporation into the mining and reclamation plan was LF03C, a legal and financial update of Chapter 1, Ownership and Control information update that was approved on May 27, 2003. All other submittals are either pending, or are relative to the submittal of water monitoring information.

Findings:

The minimum regulatory requirements have been addressed.

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Sediment Control Measures

Other areas which utilize "best technology currently available" will be described below and will be separated into operational or reclamation status depending on the current status of each.

OPERATIONAL Status

The Willow Creek Mine permit area contains the following "BTCA" areas:

1) ASCA #1; the area is located where access to the mine facilities from State Highway 191 is located.

2) ASCA #3; this is the topsoil pile for the main facilities area. This will be disturbed as reclamation proceeds.

3) ASCA's #4 and #5; these are the entrance and exit to the long tunnel (conveyor access through the mountain to the Castle Gate side). The tunnels have had the conveyors removed, but the sealing and/or backfilling of the areas remains to be completed.

4) ASCA #6; this was the pad area of the Barn Canyon ventilation shaft, which was never constructed. ASCA #6 will not be discussed further in this document.

The following areas associated with the Willow Creek/ Castle Gate disturbed area do not have ASCA designations, but utilize best technology methods to treat runoff. These are as follows:

a) The disturbed area on the west side of the Price River, which includes the rail car loading facility.

b) The topsoil pile that is located in Gravel Canyon, located on the west side of U.S. Highway 6 and 50.

c) Topsoil pile #1, located on the south side of the Crandall Canyon access road, adjacent to the gate.

RECLAMATION Status

1) The topsoil pile located in Crandall Canyon, (previously designated as pile #2, from the Castle gate MRP). Same has been reclaimed, as the stored soil volume was utilized to reclaim the Crandall Canyon surface facilities.

2) ASCA #2; this area is the abandoned mines reclamation area due east of the main topsoil stockpile area for the mine. It is doubtful that ASCA #2 will be redisturbed as reclamation proceeds.

3) The Crandall Canyon Surface Facilities Area; as noted elsewhere, the reclamation of this area was completed in November of 2003.

The BTCA areas described above will be discussed in detail below.

ASCA #1

ASCA #1 is located at the entrance to the mine facilities, inside the gate that bars unauthorized access from State Highway 191. As described in the Willow Creek mining and reclamation plan (Exhibit 13, page 26), "ASCA #1 is the portion of the mine access road which does not drain to sediment pond 001A due to the crown in the road. Runoff from the area flows into ditch UD-12 or flows along the berm a short distance before there is a break in the berm at the lowest elevation (See Map 23C). At the break in the berm, a silt fence has been installed to treat the runoff before it reaches UD-13, which flows to Willow Creek. No disturbed runoff from this area will reach Willow Creek without being treated by the silt fence." The road is

paved with asphalt material. Any sediment being transported to the silt fence would come from areas such as the inslopes of berms, or ditches. The area is inspected regularly. As observed on November 20, the silt fence was in good repair, and capable of functioning as designed. There was no evidence of sediment reporting off of the disturbed area.

ASCA #3

ASCA#3 is the main topsoil storage pile for soils recovered during the construction of the Willow Creek Mine facilities. Sediment is now and has been controlled by vegetation for several years as well as by retaining runoff inside of containment berms. Berms located on the northeast and southwest corners retain runoff within the stockpile area. As vegetation has been in place for several years, that is now considered to be the primary method of sediment control. Appendix "F" contains design calculations for the two retention basin areas. The design storm utilized to calculate the runoff for the areas is the 10 year 24 hour event, (See Exhibit 13, page 26, EX 13-26 for a detailed explanation of the area).

ASCA #4

ASCA #4 is the area near the entrance to the "long" tunnel, which provided the conveyor route through the mountain when coal production was occurring. The area is designated as WS-24, and the involved acreage is 0.34 acres. The 10 year 24 hour design volume is 926 cubic feet, which reports to a catch basin having a silt fence at the junction of basin/outflow ditch interface. Therefore as indicated within the MRP, the basin itself does not have a treatment volume sufficient to treat the design storm runoff. The basin and the berms surrounding it are well vegetated. The diversion that receives this outflow is rip rapped to the Willow Creek channel. There is no evidence of any sediment reporting from this area to the undisturbed drainage.

ASCA #5

ASCA #5 is the area adjacent to the outlet of the "long" tunnel. The area involved is approximately 900 square feet, and the runoff volume from the area reports to ditch UD-23A; from there, the flow is treated by a silt fence in ditch 23B. The flow volume then reports to a shallow depression, which existed prior to the disturbance created by the mine development. The depression is capable of holding approximately 7,000 cubic feet of runoff, and treats any volume by its inherent vegetation, and a silt fence that exists at the depressions outlet. The outflow from the depression then reports to ditch UD-23C and off the permit area. As observed on November 20, there was no evidence of sediment reporting from the disturbed area.

Gravel Canyon

The Gravel Canyon topsoil storage pile is an area utilizing "best technology currently available" practices to treat any intercepted precipitation, and preserve the soil resource. The area lies 800 feet west of the Willow Creek preparation plant facilities on the west side of U.S.

Highway 50 and 6. The topsoil pile contains approximately 97,000 cubic yards of material, which was placed in 1983, during the construction of the Crandall Canyon facilities. The soil storage will be used for the reclamation of the preparation plant area, which is occurring as this midterm review progresses. The operational runoff volumes which were used for this area of the Castle Gate property (for this soil pile) are described in Chapter 7 of Exhibit 19, Section 7.2-2(2)A, **Operational Phase**, page 7-26. As noted, the 10 year 6 hour event (1.4 inches rainfall, see **TABLE 7-7**) is the design storm utilized to calculate runoff volumes for the area.

As noted in Exhibit 19, Chapter 7, TABLE 7-8, (page 7-76), the Gravel Canyon area comprises 5.5 acres, and utilizes vegetation as the alternative method of sediment control for the operational phase. See EXHIBIT 3.6-2 for a map depicting the OPERATIONS CONTOUR MAP, and the EXISTING DRAINAGE STRUCTURES MAP. As observed on November 20, 2003, there is no evidence of sediment reporting from the topsoil pile.

It is anticipated that backfilling and grading activities in the Castle Gate preparation plant area will commence at the beginning of 2004; thus, the recovery of topsoil from the Gravel Canyon area will probably not begin before the middle of 2004. At that time, reclamation phase sediment controls will be implemented (See section **7.2-2(5) Reclamation Structures**, page 7-41). See EXHIBIT 3.6-3, Postmining Reclamation Topography and Treatment Map. This exhibit depicts the reshaping of the Canyon after removal of the 97,000 yards of soil material. A channel will be installed through the center of the Canyon. The Legend states that "reaches of the stream channel or ditches protected by silt fences". "Silt fence segments shall be installed parallel to contours, as described in section 3.6-4 (3). The reshaped area will have sediment control implemented through seeding, and mulching. Although not stated, it is surmised that the Permittee will implement surface roughening as part of the reclamation activities, to enhance the sediment control.

Volume 11, **Section 3.6, APPENDIX 3.6C** of the Willow Creek Mine, mining and reclamation plan contains alternative sediment control calculations for the Gravel Canyon area. The design storm for the reclaimed area was the 10 year 6 hour event (1.8 inches rainfall). The calculations were made using a drainage area comprising 2.6 acres (north side of reclamation) and 2.4 acres (south side of reclamation). Page 11 of 19 contains the sediment yield calculations for the Gravel Canyon area.

Page 3.6C-3 of Appendix 3.6C (Volume 11, EXHIBIT 19) contains verbiage that **"a calculation of the adequacy of a single layer (silt) fence system was performed. The results indicate that the spacing of the fences will have to vary depending on location and the grade of the reclaimed ground surface adjacent to the channel. However, a single layer system will be sufficient. In all cases, the silt fences shall be constructed in accordance with Figures 3.6-3 and 3.6-4 with the fences parallel to the contours. Additionally, the fences should be constructed with sufficient projected overlap, and the length of the fence segments should correspond to the spacing and orientation of those segments along the channel."** Page 3.6-9 also indicates that the mechanical treatment of runoff, provided by surface

roughening would be utilized in the area, as well as surface protection, (mulching). The sediment control measures that will be implemented in the Gravel Canyon area after the recovery of the soils appear adequate to minimize additional contributions of sediment to the Price River drainage.

Crandall Canyon Topsoil Pile #1

As noted previously, a topsoil pile exists on the SE corner of the Canyon access road, adjacent to Highway 50 and 6. An examination of Exhibit 20, Crandall Canyon, Exhibit 3.7-7F depicts this pile. The volume of material (1,210 yards, see TABLE 3.7-10, EXHIBIT 20, Crandall Canyon) that is stored here came from the development of the newer Canyon access road. This road will remain in place as part of the approved post mining land use. Thus, the Permittee may consider this soil volume to be a surplus. The pile has existed for approximately twenty years and is vegetated, although noxious weeds are present.

Exhibit 19, Chapter 7, Hydrology, Castle Gate Mine, page 7-76 makes reference to two topsoil piles, (No. 1 and No. 2) comprising 1 acre of total area for the two, utilizing vegetation as the method of alternative sediment control. Exhibit 3.7-5C is referenced, but cannot be located in the current MRP.

In the December 3, 2003 Technical Analysis, the Division noted that the type of sediment control to be implemented for the remaining pad upon the reclamation/use of the #1 topsoil pile was missing. On January 8, 2004, the Permittee responded to that deficiency by submitting a revision to page 3.7-53, Exhibit 20, Chapter 3, Section 3.7-5(4)(5), Alternative Sediment Control Measures. The revision to that page merely clarified the location of Topsoil Pile #1. The **approved** page 3.7-53 clearly states, (See paragraph 3) "mechanical treatment will be performed following the topsoil spreading and mulching of the site area by gouging the soil to a depth of 12" to 18" using the bucket of a track mounted backhoe. Gouging will loosen the soil, allow root penetration, increase surface roughness, and increase moisture storage. This will allow for quicker vegetation establishment, which will reduce erosion. The depressions from the gouging trap sediment dislodged by raindrop impact and overland flow. They also shorten the exposed reaches over which sediment will flow, thereby reducing the sediment carrying capacity of the runoff". This is adequate to address the concern aired in the Divisions 12/3/2003 deficiency document.

Castle Gate Rail Loading Facility

This is the area that is located on the west side of the Price River but east of the Denver and Rio Grande Western railroad tracks. The area was originally permitted as a "small area exemption" (SAE) for sediment control/runoff evaluations. This information can still be found in the Willow Creek Mine, mining and reclamation plan, (See Volume 11, EXHIBIT 19, Section 3.8, UNIT TRAIN LOADOUT. The sediment control evaluation in this section has been superseded, and should be removed.

In April of 1998, the Division approved ACT/007/038-AM97F, which changed the method of sediment control in the rail loadout area from a small area exemption, to an "alternate sediment control area", (ASCA). The Permittee submitted a design for, and upon approval implemented a small catch basin on the south end of the expanded disturbed area at the loadout. The design information for this catch basin is contained in Volume 10, EXHIBIT 19, Chapter 3, Section 3.4, **APPENDIX 3.4G.** As indicated on Page 1 of the design calculations, (Sediment Trap #1) is designed to retain runoff from a two year 24 hour design event. **The trap overflow has been designed to safely pass the peak flow resulting from the 10 year 6 hour storm.** The disturbed area involved is 0.53 acres (CGWS-21); a rainfall amount of 0.46 inches has been used to calculate a runoff volume of 880 cubic feet.

As observed in the field, a silt fence braced with wire screen provides additional treatment of the overflow volume. This fence is located at the basin/spillway interface. The spillway utilizes vegetation throughout its length prior to the flow volume reporting to the Price River.

Findings:

The information provided in the mining and reclamation plan is adequate to meet the minimum regulatory requirements.

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The following areas in the Willow Creek Mine permit area have been reclaimed, and are required to meet effluent criteria in order to be in compliance.

Crandall Canyon Topsoil Pile #2

A soil volume of 6,680 cubic yards previously existed at this location (three-tenths of a mile up Canyon of the gate located adjacent to U.S. Highway 50 and 6). It has been recovered and utilized in the reclamation of the Crandall Canyon surface facilities. The area, including the access road, has been roughened, seeded and mulched. It is felt that the sediment yield

calculations which were developed and which are contained in Appendix 3.7-7Q can also be applied to this area. The Permittee has utilized the same roughening technique/dimensions, and seeding and mulching techniques that were utilized in the main facilities area in this area as well. No sediment has been detected leaving this area.

ASCA #2

ASCA#2 "is a previously disturbed area **that has been reclaimed** by the Abandoned Mine Reclamation program of the Utah Department of Natural Resources, Division of Oil, Gas and Mining. This area has been regraded and revegetated. The Title IV program also placed numerous silt fences along the perimeter of this area, to treat any runoff reporting from it. As observed on November 20, vegetation is the primary means of sediment control; there was no sediment noted as leaving this area.

Crandall Canyon Surface Facilities Area

As previously noted within this document, the area in Crandall Canyon that contained the surface facilities was completed relative to final reclamation activities during November 2003. The area previously utilized two sediment ponds to treat the disturbed runoff prior to same entering Crandall Creek. Both ponds were reclaimed, due to the fact that they would have been above grade relative to the final surface configuration of the area. Sediment control for the reclaimed area has been referenced in EXHIBIT 20, Section 3.7, Crandall Canyon, Chapter 3, page 54. Same refers to the sediment yield calculations determined using the proposed vegetative cover, mechanical treatment, and mulching. These techniques have been implemented at the Crandall Canyon site, (See **Appendix 3.7-7Q**). As observed on November 20, 2003, there was no evidence of sediment reporting from the disturbed area of the Crandall surface facilities area.

Findings:

The minimum regulatory requirements of this section have been addressed.

RECOMMENDATIONS:

The information currently contained within the approved mining and reclamation plan for the Willow Creek site relative to alternate sediment control areas is adequate to meet the minimum regulatory requirements of this section.